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ABSTRACT

Outdoor behavioral healthcare (OBH) programs treat adolescents with emotional, behavioral, and substance abuse problems using wilderness therapy and related therapeutic and educational curricula. Elements of OBH are designed to reveal and address problem behaviors, foster personal and social responsibility, and enhance clients' emotional growth. This report presents outcomes on 858 clients of 8 private-placement OBH programs. Treatment outcomes were evaluated through client self-report and parent assessment of adolescent well-being at admission and discharge. The development, use, and validity of the Youth-Outcome Questionnaire are discussed. Clients were in OBH treatment for an average of 38 days. Clients were predominantly male, aged 16-18, with a variety of disruptive behavioral, mood, and substance disorders as their primary psychiatric diagnosis. Over half had a history of outpatient treatment. Both self-reports and parent reports indicate that participation in OBH programs led to significant reductions in the severity of behavioral and emotional symptoms. A majority (55 percent) of clients had ratings at discharge that were compatible with a normal range of symptoms. (Contains 38 references and 20 data tables and figures.) (Author/SV)

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Assessment of Treatment Outcomes in Outdoor Behavioral Healthcare

November 2001

Keith C. Russell, Ph.D.

Outdoor Behavioral Healthcare Research Cooperative in the University of Idaho-Wilderness Research Center

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Cover photo courtesy of Catherine Freer Wilderness Therapy, and shows a parent and child reconnecting after OBH treatment.

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Executive Summary

This publication describes and reports results from a study of client outcomes in eight participating outdoor behavioral healthcare (OBH) programs. A pretest-posttest, research design was used to assess 858 out of 1035 clients (83%) who received OBH treatment from May 1, 2000 to December 1, 2000. Treatment outcomes were evaluated through client self-report and parent assessment of adolescent well-being at admission and discharge utilizing the Youth Outcome Questionnaire (Y-OQ) (Burlingame, Wells, & Lambert 1995). A subsequent report will present data from follow-up assessments on the same clients at three-, six-, and twelve-month periods. Clients in this study were in OBH treatment for an average length of 38 days.

The clients enrolling in the eight OBH programs during the period of this study were predominantly male (69%) and between the ages of 16-18 (75%). Clients entered treatment with a variety of disruptive behavioral, mood and substance disorders as their primary psychiatric diagnoses. Of the 481 clients for whom data were available on diagnoses, 48% also had a secondary diagnoses. Most prevalent were those diagnosed with behavioral disorders (38%), some form of substance abuse or dependence disorder (30%), and mood disorders (22%). Over half (57%) of the OBH clients had a history of outpatient treatment, 17 % had utilized inpatient services, and 13% had utilized both types of services prior to OBH treatment.

Client self-report mean Y-OQ scores were 70.67 at admission and 47.55 at discharge, indicating an average score reduction of more than 20 points. **Parent assessment** Y-OQ mean scores were 101.19 at admission and 48.55 at discharge, indicating an average reduction of 52.64. Thus, parents rated the clients presenting symptoms as more severe than did the clients themselves, but they perceived symptoms at discharge that were very similar. Discharge scores for both client self report and parent assessment are close to the normal range of symptoms (46 or below) as established by Burlingame et al. (1995b) in their sample tests of normal populations. Client self-reported Y-OQ scores across all ages show similar reductions from admission to discharge, and with exception of 15-year olds, showed a trend of increasing score reductions with increasing age (16 to 18). Parent assessments across all age groups were higher at admission and showed similar reductions at discharge. Female clients report higher Y-OQ admission and discharge scores for both client self-report and parent assessments, and also showed a greater reduction in scores than males. However, client self-report discharge scores for females remained higher than for males (54.37 and 47.44 respectively).

Results of this study indicate that participation in OBH programs led to a statistically significant reduction in the severity of behavioral and emotional symptoms, as perceived by the clients, and even more so by their parents, as measured by the Y-OQ questionnaire. A majority (55 %) of OBH clients participating in this study had Y-OQ scores at discharge compatible with a normal range of symptoms (46 or below) as established by Burlingame et al. (1995b) in their sample tests of normal populations. When comparing the results of this study to other outcome studies in the literature which used the Y-OQ, OBH programs showed greater score reductions in shorter treatment durations.

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Introduction

Outdoor behavioral healthcare (OBH) is an emerging treatment in mental health practice for adolescents with emotional, behavioral, psychological and substance use disorders. More than 100 OBH programs in the United States annually serve more than 10,000 clients and their families (Russell & Hendee, 2000). OBH programs treat adolescents using wilderness therapy and related outdoor treatments, a therapeutic approach that involves immersion in wilderness or comparable lands, group living with peers, individual and group therapy sessions, educational and therapeutic curricula including backcountry travel and wilderness living skills, all designed to reveal and address problem behaviors, foster personal and social responsibility, and enhance the emotional growth of clients (Davis-Berman & Berman, 1994; Russell & Hendee, 2000; Russell, 1999).

Despite longevity of practice and anecdotal evidence of the positive benefits of wilderness therapy for adolescents, there have been few randomized controlled studies to scientifically document the beneficial effects of treatment. To the contrary, a few highly publicized negative incidents in programs resulting in client deaths or injury casts a shadow on OBH interventions (Krakauer, 1995; Jenkins, 2000). This led to more oversight of program operations and regulations in many states to establish minimum standards of operation and the establishment of the Outdoor Behavioral Healthcare Industry Council (OBHIC) in 1996 to help develop standards of care in OBH. Today, 85% of all OBH programs are currently licensed by State agencies, so it is increasingly difficult for substandard programs to remain in operation (Russell & Hendee, 2000).

A major appeal of OBH programs when compared to residential treatment is their wilderness challenge approach provides an alternative for resistant adolescents unwilling to commit to traditional psychological treatment.

OBH is often misperceived in the popular media as utilizing a military like approach (Krakauer, 1995). This perception is inaccurate for the industry as a whole, as most OBH programs take an empathetic and self discovery approach to working with troubled adolescents compatible with basic counseling approaches (Davis-Berman & Berman, 1994; Rodgers, 1961, Russell, 1999; Russell 2000). A major appeal of OBH programs when compared to residential treatment is their wilderness challenge approach provides an alternative for resistant adolescents unwilling to commit to traditional psychological treatment due to the stigma associated with it (for a detailed review of OBH theory and practice and number and types of programs, see Russell & Hendee, 2000). Several reviews of literature have examined outcomes associated with the effects of OBH-related wilderness programs on participants (Burton, 1981; Cason & Gillis, 1994; Easley, Passineau, & Driver, 1990; Ewert, 1983, 1987; Friese, Hendee & Kinziger, 1998; Hattie, Marsh, Neill, & Richards, 1997; Moote & Wadarski, 1997; Russell, 1999; Winterdyk & Griffiths, 1984). Two categories of outcomes are consistently reported in the literature from participation in wilderness and outdoor treatment programs: a) enhanced self-concept, and b) the development of appropriate and adaptive social skills. Despite these reported positive benefits and documented growth in the number of OBH programs serving adolescents in the last decade (Russell & Hendee, 2000), very few studies have rigorously tested how well OBH programs work to effect positive changes in adolescent client's psychological well-being. The outcome research reported has relied on methodologies that make it difficult to replicate studies from one program or setting to the next. Systematic reviews

of research emphasize the lack of a theoretical basis in most studies, the poor quality of measurement instruments used to assess outcomes, methodological shortcomings, and a general lack of comparable (consistent) findings (Cason & Gillis, 1994; Hattie et al., 1997; Winterdyk & Griffiths, 1984).

This publication addresses some of these limitations in reporting results from a study of client outcomes in eight participating OBH programs, utilizing an adolescent outcome assessment questionnaire called the Youth Outcome Questionnaire (Y-OQ) (Burlingame et al. 1995b). First, the structure and development of the Y-OQ is reviewed including validity and reliability. Second, research methods are presented, including participating programs, sampling, client and parent assessment procedures, limitations and potential bias in the method, and data entry and analysis. Finally, results from the study are presented including: 1) client demographics, (age, gender, DSM-IV diagnoses, and history of prior treatment); 2) treatment outcomes, including client self-report and parent assessments and how they relate to client attributes; 3) a discussion of differences between parent and client assessments; and 4) a discussion of the how results from this study relate to other adolescent treatments for which outcomes have also been assessed utilizing the Y-OQ.

Youth Outcome Questionnaire (Y-OQ)

Introduction

Accountability in mental health service delivery in the United States based on concern for cost and quality care has fueled the need for better assessment of outcomes (Burlingame, Lambert, Reisenger, Neff, & Mosier, 1995). Further, desire to improve programs, address adolescent's unique needs, competition for clients and grants, and a concern for program reputation all fuel the quest to assess outcomes and determine how best to treat adolescents with behavioral problems and addictions. In addition, administrative mandates by national accreditation agencies such as the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) and the Council on Accreditation (COA) require on-going monitoring of patient care and outcome assessment. A need for better outcome assessment has led to the development of over 1,400 different outcome measures reported in the literature (Lambert, Ogles, & Masters, 1992). The large number and variety of outcome assessment devices suggests a tailoring of them to suit unique needs of different programs, practitioners and clients.

Accountability in mental health service delivery in the United States based on concern for cost and quality care has fueled the need for better assessment of outcomes.

Youth-Outcome Questionnaire (Y-OQ)

The Outcome Questionnaire (OQ) was developed to meet the need in managed healthcare for a valid and reliable psychometric tool to assess outcomes (Lambert, Huefner, & Reisenger, 1996). The Youth Outcome Questionnaire (Y-OQ™) and Self-Report-Youth Outcome Questionnaire (SR Y-OQ™) evolved from the OQ to meet the needs for assessing adolescent treatment outcomes (Burlingame, Wells, & Lambert, 1995). The Y-OQ and SR Y-OQ (herein referred to simply as the Y-OQ except where distinction is important) offers parent assessment and adolescent self-reports designed for repeated measurement of client symptoms. (e.g. admission, during therapy, at termination, and at follow-up intervals) (Burlingame et al., 1996; Lambert & Cattani-Thompson,

1996; Lambert et al., 1992; Lambert et al., 1996; Russell, 2000; Wells, Burlingame, Lambert, Hoag, & Hope, 1996; Wells, 1990).

A total of 64 questions are included in the Y-OQ to assess change in the six content areas described in Figure 1.

Figure 1. Six Content Areas of the Youth Outcome Questionnaire

Content Area	Assesses
Intrapersonal Distress (ID)	Assesses change in emotional distress including anxiety, depression, fearfulness, hopelessness, and self harm.
Somatic (S)	Assesses change in somatic distress typical in psychiatric presentation, including headaches, dizziness, stomachaches, nausea, and pain or weakness in joints.
Interpersonal Relations (IR)	Assesses change in the child's relationship with parents, other adults, and peers as well as the attitude towards others, interaction with friends, aggressiveness, arguing, and defiance.
Critical Items (CI)	Assesses inpatient services where short term stabilization is the primary change sought: changes in paranoia, obsessive-compulsive behavior, hallucination, delusions, suicide, mania, and eating disorder issues.
Social Problems (SP)	Assesses changes in problematic behaviors that are socially related, including truancy, sexual problems, running away from home, destruction of property and substance abuse.
Behavioral Dysfunction (BD)	Assesses change in a child's ability to organize tasks, complete assignments, concentrate, handle frustration, including items on inattention, hyperactivity, and impulsivity.

The Y-OQ parent assessment is designed to measure parent perceptions of a wide range of behaviors, situations, and moods which commonly apply to troubled teenagers. The Y-OQ self-report is designed to measure client self assessments of the same behaviors. When the client is admitted to treatment, the Y-OQ is completed by parents and the client to establish baseline scores against which to compare future scores. The assessment periods used in this study are at admission and discharge, with further assessments planned at 3-, 6-, and 12-month follow-up periods to be reported in subsequent publications. The 64 items contained in the Y-OQ are summed across the six content areas to produce a total score. An example of a Y-OQ question asked of parents is presented in Figure 2.

Figure 2. Sample Y-OQ question asked to the parent

0 Never or almost never true	1 Rarely true	2 Sometimes true	3 Frequently true	4 Always or almost always true
My Child: 1. Does not participate in activities that were previously enjoyable	0	1	2	3	4

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Criteria to Assess the Y-OQ and SR Y-OQ

Vermillion and Pfeifer (1993) outline four major criteria to consider in evaluating an outcome assessment device. The first set of criteria is that the assessment device should be as good as the technical features of the measures with which it was produced, that is, the validity and reliability of the measuring instrument. Internal consistency (validity) and test-re-test (reliability) estimates when expressed in coefficients give measures of the consistency in client responses and the temporal stability of a measurement device, respectively. Validity refers to the degree to which a test measures what it purports to measure, i.e. does a parental and/or youth assessment of a particular youth behavior really measure that behavior. Reliability refers to the consistency with which such measures are reported, i.e. a respondent would provide the same answer to a question when asked a second time under the same circumstances.

As a general rule, validity and reliability coefficients should be at or above .80. Estimates of the Y-OQ internal consistency range from .74 to .93 with a total scale estimate of .96. Test-re-test reliability scores are also above .70, indicating moderately high temporal stability (Burlingame et al., 1996 for review of these estimates). High correlations exist between the Y-OQ and subscale scores, and other frequently used assessment instruments (Wells et al., 1996). For example, scales on the Child Behavior Checklist (Achenbach, 1991) correlate highly with parallel scales on the Y-OQ. (See Burlingame et al. (1996) for an in-depth discussion of reliability and validity of the Y-OQ.) The Y-OQ instrument can be easily administered by staff at each OBH program and only takes ten minutes for the parents and client to complete. The device has not proven too complicated or detailed for respondents, which is an important consideration when working with adolescents (Burlingame et al., 1996). Thus, the Y-OQ assesses the psychological symptomatic and social functioning of the adolescents, which reflects the goals of OBH treatment and is a well-normed and easily administered outcome measure with good internal consistency and test-re-test reliability.

The Y-OQ is a well-normed and easily administered outcome measure with good internal consistency and test-re-test reliability.

A key distinction in delineating treatment effects is to identify symptomatic improvement that often precedes behavioral improvement (Burlingame et al., 1995a). Functional improvements for an adolescent, such as improvements in school performance and family relationships, often occur later in treatment than do symptomatic improvements. Because the content areas contained in the Y-OQ assess various elements of therapeutic change in response to therapy, it is thought to be sensitive to symptomatic and functional improvements the client is making. While the OQ and Y-OQ stand up well to these criteria one must always be aware that questionnaires do not directly measure the behavior, situations and moods in question; they measure the reporter's perceptions of those attributes based on response to questions about them in the questionnaire.

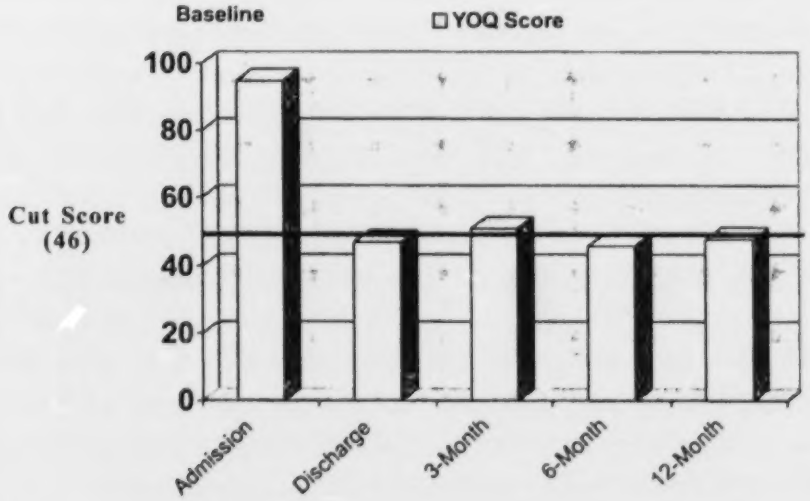
Clinically Meaningful Change

The validity of the Y-OQ rests upon it's ability to detect change from the previous assessment. This is especially critical because other popular child assessment measures such as the Conners' Parent Rating Scale, the Revised Behavior Problem Checklist, and the Child Behavior Checklist have not proven adequately sensitive to measuring changes (Mosier, 1998). Based on the work of Jacobsen and Truax, (1991), the Y-OQ has identified through research score intervals where normative functioning by the adolescent is indicated. When certain cutoff scores are reached, the client is said to have clinically improved or reached a normal distribution of symptoms (Wells et al., 1996).

Burlingame et al. (1996) evaluated other inpatient, residential, and outpatient therapies, and have suggested criteria for assessing whether a client can be labeled "recovered" or "improved." Adolescents who have follow-up Y-OQ scores of 46 indicate normal functioning. Therefore, if a client's score moves into a range lower than 46 after treatment, they might be labeled "recovered". A client that has moved thirteen or more points but does not reach the range of normal functioning indicated by a score of 46, can be labeled "improved." These two criteria will used in this study to relate the change in parent assessment and adolescent self-report scores from admission to discharge.

At admission into treatment, the parent and client are each administered their respective Y-OQs. The scores generated from these assessments serve as pretreatment baseline measures of the child's symptom's or conditions in the attributes addressed. At the conclusion of treatment, the parent and client complete questionnaires which assesses the same attributes, generating "at discharge" posttreatment scores. The change in scores indicates the client's therapeutic progress. For example, a client may enter treatment with a Y-OQ and SR Y-OQ score of 95 and 100 respectively, and at the termination of the OBH program, his/her Y-OQ and SR Y-OQ scores at discharge from treatment may have dropped to 47 and 53 respectively. Relating these scores to the above discussion of clinical improvement and recovery, a 47 and 53 would be considered clinically "improved" (a movement of 13 or more points) but not "recovered" because the score is not 46 or lower (see example in Figure 3). Follow-up measurements at three-, six-, and 12-month intervals after discharge from treatment might show a continued stable distribution of Y-OQ scores.

Figure 3. Hypothetical Y-OQ scores of a client at admission, discharge and three-, six-month, and one-year after treatment.



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Research Methods

Research Design

A pretest-posttest research design was used in this study (Graziano & Raulin, 1997). A census of 858 clients at eight participating programs (see Table 1) were surveyed during the time period of May 1, 2000 to December 1, 2000. The eight participating programs are all members of the Outdoor Behavioral Healthcare Industry Council (OBHIC) but do not represent the entire OBH industry. Therefore, study findings cannot be generalized beyond these eight programs. The outcomes do represent the outcomes possible under the parameter of treatment in these programs.

Table 1. Participant programs, program type, model and length and program time spent on wilderness expedition (Russell & Hendee 2000).

Organization	Type	Model	Length[1]	Time Spent on Wilderness Expedition
Anasazi 1424 S. Stapley Mesa, Arizona 85204	Private Placement	Continuous Flow Expedition	56 days	56 days
Ascent PO Box 230 Ruby Creek Road Naples, Idaho 83847	Private Placement	Base Camp Expedition	42 days	14 days
Aspen Achievement Academy PO Box 369 Loa, Utah 84747	Private Placement	Continuous Flow Expedition	52 days	52 days
Catherine Freer PO Box 1064 Albany, Oregon 97321	Private Placement	Contained Expedition	21 days	21 days
Red Cliff Ascent 757 S. Main Street Springvale, Utah 84663	Private Placement	Continuous Flow Expedition	56 days	56 days
Summit Achievement Academy Deer Hill Road Box 500 Fryburg, ME 04037	Private Placement	Residential Expedition	56 days	28 days
SunHawk Academy 948 N 1300 W St. George, Utah 84770	Private Placement	Residential Expedition	180 days	28 days
SUWS 911 Preacher Creek Road Shoshone, Idaho 83352	Private Placement	Contained Expedition	21 days	21 days
			Ave. 60.5 days	**Ave. 34.5 days**

1. It is important to note that length in treatment does vary. In this study, clients were in treatment an average of 38 days across all models. The difference in averages presented here are due to the fact that Sunhawk clients were assessed after only 28 days, which represented the wilderness expedition phase of treatment.

Research Questions

The following research questions were addressed in this study:

Research Question 1. What outcomes resulted from OBH treatment as measured by Y-OQ and SR Y-OQ composite and content area score differences between admission and discharge?

Research Question 2. How did treatment outcomes vary according to client attributes, such as age, gender, primary diagnoses, and presenting symptom severity?

Research Question 3. How did OBH treatment outcomes vary according to program length and treatment model?

Data Collection and Entry

The parents or legal guardians of clients enrolling at each participating program between May 1 and December 1, 2000 were asked to sign a research consent form during the admission process. Of the 1,035 clients and their parents asked to participate in the study, 858 agreed (83%). Consent forms were administered and maintained at each respective program. Care was taken by the Y-OQ administrators at each program to explain the importance of the research to improve OBH treatment, and the vital role parents play in making this outcome study possible. The confidentiality of parents or legal guardians and clients was maintained through the assignment of a code by each program administrator, which was used throughout the data collection, analysis and reporting process.

Of the 1,035 clients and their parents asked to participate in the study, 858 agreed (83%).

Clients participating in the study and a parent or legal guardian were asked to complete the Y-OQ questionnaire at admission. For divorced or separated parents, the primary care parent or legal guardian was asked to complete the questionnaire. For families with both parents residing in the household, either parent was asked to complete the questionnaire. If parents or legal guardians were unavailable, the program administrator mailed them the questionnaire, along with a return envelope addressed to the University of Idaho-Wilderness Research Center (UI-WRC) and cover letter outlining the purposes of the study. An initial phone call was made by each program to ensure that the parent or guardian received the information, and to answer any questions regarding their participation in the study.

After each adolescent client officially completed their treatment program, the parents or legal guardians were asked to complete a Y-OQ discharge questionnaire. Their assessment at discharge was based on their communication and contact with their child while he/she was in treatment, communication with the therapist responsible for their care, and contact with their child at graduation ceremonies. The completed discharge questionnaire was then mailed by the respondent directly to the UI-WRC in an addressed and stamped envelope.

Clients were also asked to complete a self-report Y-OQ at discharge. This was done before the client was released from the program to ensure a higher response rate. These questionnaires were then collected by program administrators at each site and mailed directly to the UI-WRC. Upon receipt of the completed Y-OQ questionnaires from each program, a database was constructed and a coded file was established at the UI-WRC for each client. Each additional Y-OQ was added to the data base as it was received. Questionnaires were filed according to client identification numbers and program codes, and were accessible only by the principal investigator and a research assistant.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS™). Data were first imported from the database into SPSS where they were assigned variable names based on the type of analysis to be conducted. Average client self-report and parent composite scores were calculated, as well as average differences between admission and discharge scores. A paired sample t-test was conducted to determine statistical significance between admission and discharge scores. Average scores for the six content areas contained in the Y-OQ were also calculated. To examine differences in treatment outcome according to client attributes of age, gender, primary diagnoses, and presenting symptom severity, clients were categorized based on these attributes, and paired samples t-tests were again conducted to determine statistical significance between admission and discharge scores. The same process was used to examine treatment outcome by treatment model and program length. Finally, a series of correlations and a step wise regression were performed to determine if one independent variable (client attributes, program length and model) was more predictive of treatment outcome than others.

Limitations to the Study

There are several potential sources of error or bias in this study. The first limitation to note is that no control group was utilized and there was no random assignment of treatment. This is due to the difficulties and cost of establishing control groups in private placement programs. Of the 858 client and parent units who agreed to participate in the study, complete data sets of admission and discharge scores were provided by 338 parents (39.9%) and 481 adolescent clients (56.1%). The mean participation rate among clients in all programs was 83% (858 of the 1053 clients entering treatment). Participation rates among programs ranged from 63% to 93% (see Table 2). The limitations posed by this response rate and sources of potential bias are discussed below.

Table 2. Total number of clients participating in OBH treatment and participating in the study from May 1, 2000 to December 1, 2000 in the eight participating programs.

Program	Total Number of Clients In OBH Treatment	Total Number of Clients in Study	Percent of Clients in Study
Ascent	212	185	87%
Freer	171	150	88%
SUWS	145	133	92%
Redcliff	135	120	89%
Aspen	167	105	63%
Anasazi	106	86	81%
Sunhawk	67	52	78%
Summit	32	27	84%
Total Number of Clients	1035	858	83% Ave.

Non-Participant Bias

Since all clients during the time period May 1, 2000 to December 1, 2000 were asked to participate in the study, potential (but unknown) bias in study results would occur if parent or clients not agreeing to participate in the study were somehow consistently different from those who did agree to participate. A total of 83% of all parent and client units enrolling in the eight programs during the study period agreed to participate (858 out of 1035 parent client units). For the 17% who did not agree to participate, no data were gathered with which to compare them with participants; most cited confidentiality as their reason for not participating.

Non-Response Bias

A potential source of bias may result from the present study from parents and client units initially agreeing to participate in the study, and failing to complete both their admission and discharge questionnaires. Bias could result if these scores are consistently different from respondents providing complete data sets. For example, some parents and clients completed consent forms and assessments at admissions, but did not complete an assessment at discharge. To examine this potential bias, means were calculated for client self-report and parent assessments for which only an admission or discharge score was obtained, and these scores were then compared respectively with admission and discharge scores in complete data sets (see Table 3).

To examine non response bias, means were calculated for client self-report and parent assessments for which only an admission or discharge score was obtained, and these scores were then compared respectively with admission and discharge scores in complete data sets.

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Fewer parents responded with both admission and discharge scores (41%) than did clients (57%). It was possible to compare the admission scores of the parents who did, and few differences were found. A total of 322 parents (38%) completed admission assessments only, and their mean admission scores were similar to the mean admission scores from study participants with complete data sets (97.31 and 101.19 respectively, see Table 3). There were 180 clients (21%) who only completed admission assessments, but their mean scores were also comparable to admission scores of clients with complete data sets (73.21 to 70.67 respectively). A one-sample t-test was performed to assess whether mean differences in complete data sets were statistically different than mean differences in complete data sets. The mean differences from admission to discharge were not statistically different for client self-reports, but were for parent assessments ($p < .01$).

Interestingly, the 34 parents (4%) and 76 clients (9%) who provided only discharge scores had higher mean scores than did parents or clients providing full data sets (76.12 versus 48.55 for parents and 56.71 versus 47.55 for clients). This also led to statistically significant differences in mean differences between admission and discharge. This may be explained by the fact that parents not completing an admission assessment were less familiar with the questionnaires and had no baseline from which to compare. Study retention is a common problem across longitudinal studies such as these; the longer the study lasts, the higher will be the drop-out rate at lengthier follow-up periods.

Table 3. Mean scores of client self-report and parent assessments with missing data at admission and discharge and their relation to mean scores of complete data sets.

	Frequency	Mean Score	Mean Score for Complete Data Sets
Client Self-Report (Full Set)	481		
No Assessments	121		
Admission Assessment Only	180	73.21	70.67
Discharge Assessment Only	76	56.71	47.55
Mean Difference in Admission and Discharge Scores		16.50*	20.07*
Total	858		
Parent Assessment (Full Set)	338		
No Assessments	164		
Admission Assessment Only	322	97.31	101.19
Discharge Assessment Only	34	76.12	48.55
Mean Difference in Admission and Discharge Scores		21.19**	51.64**
Total	858		

*Means were not found to be statistically different ($p < .01$)
**Means were found to be statistically different ($p < .01$)

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Summary of Limitations

The study findings are based on complete data sets from 338 parents and 481 clients, which represent 33% and 47%, respectively, of all the OBH clients entering treatment in the eight OBH programs from May 1, 2000 to December 1, 2000. Of the missing, 17% are accounted for by those parents declining to participate. While our study results represent only those clients agreeing to participate and providing complete data sets, it appears as though those non-responding parents who only completed discharge questionnaires rated discharge scores higher than did the complete data sets. However, this group of non-respondent parent assessments was small. Other analyses shows that there are no statistically significant differences between OBH clients and families participating and not participating in the study.

RESULTS

Client Characteristics

Gender and Age

Approximately 70% of clients in OBH treatment were male, and 30% female. Clients ranged in age from 12-20 years, with 75% of clients between the ages of 16-18 years (Table 4). Tables 4 and 5 show the study participants' gender and age.

Table 4. Gender of study participants.

Gender	Number of Clients	Percent
Male	589	68.6
Female	269	31.4
Total	858	100.0

Table 5. Ages of study participants.

Age	Total Number of Clients	Percent
11	1	.1
12	2	.2
13	20	2.3
14	79	9.2
15	159	18.5
16	256	29.8
17	227	26.5
18	81	9.4
19	5	.6
Total	830	96.7
Age Data Available	28	3.3
Total Number of Clients	**858**	**100.0**

Primary Diagnoses

Table 6 shows the types of disorders with which clients were primarily diagnosed (according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA,1994)) and their frequency (some clients may have been diagnosed with more than one disorder, primary diagnoses only are reported here). Specific diagnoses were made for 481 of the 858 study participants (56%) (see Table 6). Almost 10% of the diagnoses were too varied to report here.

Oppositional Defiant Disorder (29%) was the most frequent diagnosis reported, followed by 25.8% with diagnoses associated with some kind of substance abuse or dependence (cannabis dependence (10%), cannabis abuse (5%), alcohol dependence (.7%), alcohol abuse (2.3%), and amphetamine dependence (1.1%)). Depression Disorder (10%) and Dysthymic Disorder (5%) (a form of depression), accounted for 15% of the diagnoses. Other primary diagnosed disorders of noted frequency included Adjustment Disorders (4%) and Bipolar Disorder (3%).

Table 6. Percent of clients diagnosed with behavioral, substance, mood or other disorders as primary diagnosis..

Disorder	Number of Clients	Percent
Behavioral Disorders[1]	182	37.8
Substance Disorders[2]	145	30.1
Mood Disorders[3]	108	22.4
Other[4]	45	9.7
Total	**481**	100
Diagnoses Available	481	56.1
No Diagnoses Data Available	377	43.9

1. Includes Oppositional Defiant, Attention Deficit, and Conduct Disorders.
2. Includes disorders associated with substance abuse or dependence.
3. Includes Depression, Dysthymia and Bipolar Disorders.

Previous outpatient services were received by more than half of all OBH clients (57%).

Prior Treatment

Previous outpatient services were received by more than half of all OBH clients (57%). Study participants had also previously received inpatient treatment services before enrolling in OBH (17.4%). Clients having received both inpatient and outpatient services was 13% and perhaps represent the most seriously affected clients in the study. Inpatient services consist of those services where the client was in protective care of the facility responsible for the child's well-being, while outpatient services are those services where the child remained in the protective custody of the parent.

Table 7. Frequency and percentage of clients who tried inpatient and outpatient treatment services prior to enrolling in OBH treatment.

Prior Inpatient Services		Number of Clients	Percent
	Yes	149	17.4
	No	709	82.6
	Total	858	100
Prior Outpatient Services			
	Yes	491	57.2
	No	367	42.8
	Total	858	100
Prior Inpatient and Outpatient Services			
	Yes	115	13.4
	No	743	86.6
	Total	858	100

Summary of OBH Client Characteristics

Adolescent clients who enrolled in OBH treatment between May 1, 2000 and December 1, 2000 in the eight programs involved in the study, and who participated in this study, demonstrated the following characteristics: 1) the majority of the 858 clients were male (69%) and were between the ages of 16-18 years old (75%); 2) they were primarily diagnosed with a variety of disorders, including behavioral disorders (38%), substance disorders (30%), and depression disorders (22%); and 3) over half of the OBH clients (57%) had received outpatient services prior to enrolling in an OBH program, 17% had received inpatient treatment, and 13% had utilized both outpatient and inpatient prior to OBH treatment.

Treatment Outcome

Research Question 1. What outcomes resulted from OBH treatment as measured by the Y-OQ and SR Y-OQ?

Overall, the results indicated that the OBH clients participating in the study had reduced behavioral symptoms as measured by both client self-reported and parent assessments using the SR Y-OQ and Y-OQ (Table 8). For client self-reports, group means decreased 20.07 points from 69.81 to 49.74 between admission and discharge. Parent assessments decreased 51.64 points from 100.19 at admission to 48.55 at discharge, more than twice the improvement reported by clients.

Results indicated that the OBH clients participating in the study had reduced behavioral and emotional symptoms as measured by both client self-reported and parent assessments using the SR Y-OQ and Y-OQ.

Table 8. Admission and discharge average SR Y-OQ and Y-OQ scores.

	N	Period	Average Mean Score	Mean Difference
Client Self Report SR Y-OQ	481	Admission	70.67	20.07*
	481	Discharge	47.55	
Parent Assessment Y-OQ	338	Admission	100.19	51.64*
	338	Discharge	48.55	

*Statitistically significant differences between admission and discharge average scores (p<.000)

Behavior Change According to Y-OQ Established Standards

The Y-OQ manual suggests that if a client's score "decreases by 13 points or more, they have attained a significant amount of symptom reduction" (Burlingame et al., 1996, p. 7). Average score reductions for both client and parents indicate score differences greater than 13, suggesting a real reduction in symptoms. These average score differences are also statistically different (p<.000). Table 9 shows that the actual score reduction in client self-reports exceeded 13 points between admission and discharge for 55% of clients, but exceeded 13 points for 83% of parent assessments. Thus, the data show that, compared to standards established by the developers of Y-OQ methodology, real reductions in presenting symptoms (13 points or more) occurred for 55% of the clients as indicated by their self-reports, and for 83% of clients in the views of their parents.

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Table 9. Percentage of study participants who showed an improvement of greater than 13 Y-OQ composite score points from admission to discharge from treatment.

	Frequency	Percent	Average Change Score
Client Self Report			
13 or Greater	215	45.0	20.1
Less than 13	266	55.0	
Total	481	100	
Parent Assessment			
13 or Greater	282	83.4	51.6
Less than 13	56	16.6	
Total	338	100	

The Y-OQ manual further suggests that a normal range of functioning would be indicated by Y-OQ scores of 46 or less (Burlingame et al., 1996). The composite client self-report and parent assessment average Y-OQ scores at discharge are 49.7 and 48.6 respectively, close to the suggested normal functioning score. But Table 10 shows that 43% of client self-reports and 46% of parent assessment scores at discharge were within the normal range (46 or lower).

Table 10. Percentage of study participants who showed improvement from admission to discharge from treatment that resulted in a Y-OQ or SR Y-OQ score of 46 or lower.

Table 10 shows that 43% of client self-reports and 46% of parent assessment scores at discharge were within the normal range of functioning (46 or lower).

	Frequency	Percent	Average Change Score
Client Self Report			
Recovered (less than 46)	211	43.1	20.1
Not Recovered (greater than 46)	270	56.9	
Total	481	100	
Parent Assessment			
Recovered (less than 46)	156	46.2	51.6
Not Recovered (greater than 46)	182	53.8	
Total	338	100	

*A normal range of functioning is indicated by a total score of 46 or lower (Burlingame et al., 1996).

Differences in Six Content Areas

Table 11 shows that reductions across all subscores contained in the Y-OQ for both client self-report and parent assessment. These subscales include content areas designed to assess symptoms associated with: (1) Interpersonal Distress, (2) Somatic, (3) Interpersonal Relations, (4) Critical Items, (5) Social Problems, and (6) Behavioral Dysfunction. These subscales are outlined in detail in Figure 1. Because each of the scales has different score ranges, it is difficult to compare absolute reduction in scores. For example, (1) Intrapersonal Distress has a score range from –4 to 68, while (2) Somatic has a range from 0

to 32. However, it is possible to examine the "cut scores" associated with each subscale to determine if discharge scores were at or below these cut scores (Burlingame et al., 1996). This would indicate a return to a normal range of symptoms in each domain at discharge.

Table 11 shows that for client-self reports, three subscales showed changes that were at or below the subscale cut score: (3) Interpersonal Relations, (4) Critical Items, and (6) Behavioral Dysfunction. Parent assessments also show three subscales with discharge scores at or below the cut score: (2) Somatic, (4) Critical Items, and (6) Behavioral Dysfunction. Both client and parent assessments showed subscale movement below the cut score for (4) Critical Items and (6) Behavioral Dysfunction with clients also showing (3) Interpersonal Relations and parents (2) Somatic, below the cut score. Change in these subscales is an important finding and shows that OBH treatment's focus on reconciling family relations, improving adolescent behavior, and addressing critical items, which includes suicidal behavior, that all lead to improved well-being, appear to be important outcomes for adolescent clients and their families. Also of interest is the (5) Social Problems subscore, which was higher than the cut score for both client and parent assessments. Because this scale measures problems with truancy, running away from home, and substance abuse, this could highlight an area with which OBH could place more focus on in treatment.

Subscale anlaysis shows important improvement in behavioral dysfunction, intepersonal relations and critical items, highlighting OBH treatment's focus on improving behavior, reconciling family relations and addressing critical issues in adolescent's lives.

Table 11. Average admission and discharge subscores-for parent assessment and client self-report including average change and associated subscale cut score.

	Frequency	Average Admission	Average Discharge	Subscale Cut Score
Client Self Report				
Subscore 1 (Interpersonal Distress)	481	22.02	17.04	16.4
Subscore 2 (Somatic)	481	7.41	5.71	5.0
Subscore 3 (Interpersonal Relations)	481	6.91	3.84*	4.4
Subscore 4 (Critical Items)	481	9.72	4.79*	5.0
Subscore 5 (Social Problems)	481	8.70	6.77	3.0
Subscore 6 (Behavioral Dysfunction)	481	15.28	11.84*	12.0
Parent Assessment				
Subscore 1 Interpersonal Distress)	337	30.46	16.66	16.4
Subscore 2 (Somatic)	337	6.97	3.75*	5.0
Subscore 3 (Interpersonal Relations)	337	16.00	5.66	4.4
Subscore 4 (Critical Items)	337	14.02	5.07*	5.0
Subscore 5 (Social Problems)	337	8.61	5.15	3.0
Subscore 6 (Behavioral Dysfunction)	337	23.14	12.08*	12.0

* Indicates discharge subscale scores below the subscale cut-off score.

Differences Between Parent and Client Assessment

Parent assessment scores consistently indicated higher levels of dysfunction for their children than did the adolescent's self-report of their problems. Yet, at discharge, scores were more similar. This is an interesting finding that will warrant further research and validation with other studies that have used both the Y-OQ and the SR Y-OQ. To further examine this idea, 243 cases were selected for which there were complete data sets (client self-report and parent assessment for each client) available on an individual client, to determine if there were differences between the 481 client self-reports and 338 parent assessments. Table 12 shows no statistical differences between mean admission or discharge scores for client self-report or parent assessment, supporting the notion that parents and clients differ in their perceptions of the severity of presenting symptoms, yet arrive at similar scores post treatment. It is difficult to compare this finding to other studies using the Y-OQ reported in the literature because only parent assessments are reported (see section on comparison of Y-OQ studies).

Parents may be more able to see the consequences of their child's behavior at admission into OBH treatment while adolescents often are in denial that there may be a problem with their behavior. This could be an important area for future research. The differences in client and parent assessments will be evident throughout the following section on treatment outcomes relating to primary diagnoses, age, gender, and problem severity at admission.

Table 12. Study participants average Y-OQ and SR Y-OQ scores at admission and discharge for whom a data set of both client and parent assessment for each client was available compared to average scores of client and parent data sets.

	Period	Average Mean Score	Average Mean Score
Client Self Report SR Y-OQ	Admission	68.72 (n=243)	70.67 (n=481)
	Discharge	46.29 (n=243)	47.55 (n=481)
Parent Assessment Y-OQ	Admission	100.32 (n=243)	100.19 (n=338)
	Discharge	48.65 (n=243)	48.55 (n=338)

Research Question 2. How did treatment outcome vary according to client attributes?

Treatment Outcome by Age

Table 13 shows that client self-report score reductions were similar across all ages, except for thirteen- and nineteen-year olds whose score reductions were significantly greater ($p<.000$). An incremental increase in reductions from younger to older is also noted. Parent assessments show similar reductions across all age groups, with 14- and 18-year olds having slightly higher reductions. Client self-report and parent assessment of 13-year olds was the highest noted reduction for all age groups.

Table 13. Study participant average Y-OQ score at admission, discharge, and difference, according to age.

Age	Frequency	Average Admission	Average Discharge	Average Difference
Client Self Report				
13	12	81.50	43.42	38.08
14	46	73.39	57.65	15.74
15	90	65.93	44.57	21.36
16	137	71.45	50.18	21.27
17	128	72.15	47.67	24.48
18	50	62.62	37.80	24.82
19	3	74.00	37.67	36.33
Age Not Available	15	91.31	45.54	45.77
Total	481			
Parent Assessment				
13	10	109.70	47.50	62.20
14	28	106.46	52.21	54.25
15	66	101.39	48.89	49.18
16	97	101.82	50.37	51.45
17	96	95.78	43.20	52.58
18	27	100.33	43.52	56.81
19	3	89.33	45.00	44.33
Age Not Available	10	99.30	74.70	24.60
Total	338			

Age and developmental issues are an important consideration due to major transitions taking place during adolescence which upset self esteem and coincide with the search for identity (Block & Robbins, 1993; Grotevant & Cooper, 1986). Burlingame et al. (1996) found no reliable differences across age groups in outpatient and inpatient sample scores at admission, but did note that 15-17-year olds reported higher behavioral distress when compared to younger age groups. This might help to explain an incremental increase in score reductions for older clients. Age is an especially important consideration in OBH treatment utilizing wilderness therapy. Davis-Berman & Berman (1994) have questioned the use of wilderness therapy with younger populations because of the difficulty to grasp abstract relations which are often used in relating lessons learned from treatment to the adolescent's peer and family relations. Russell (1999) found that programs will not accept an adolescent into treatment if the program believes they are too young physically and emotionally to manage the treatment program. Given the significant score reductions in 13-year olds raises the issue of utilizing OBH treatment as an early intervention before problem behaviors become increasingly destructive in later years, and could be an important treatment service delivery consideration.

Treatment Outcome by Gender

Table 14 shows females have higher admission scores than do males for both client self-report and parent assessment (15.32 and 13.86 respectively higher than males). Female self-reports show discharge scores remained higher, while parent assessments were similar to males. Reductions between admission and discharge were 49% greater for females than for males in client self-report and 31% greater for females in parent assessments. Burlingame et al. (1996) examined gender differences at admission, and found no reliable differences between males and females in total Y-OQ scores, but did find differences in two subscales. Male were found to have higher behavioral dysfunctional scale scores than females, while females have higher somatic scale scores than males (p. 8). This may explain score differences between male and females. These findings suggest that female clients may be more responsive to OBH treatment than males, despite the fact that males outnumber females in OBH enrollment by about three to one.

These findings suggest that female clients may be more responsive to OBH treatment than males, despite the fact that males outnumber females in OBH enrollment by three to one.

Table 14. Gender of study participant and Y-OQ score at admission and discharge, including average change in total score.

	Gender	Frequency	Average Admission	Average Discharge	Average Difference
Client Self Report					
	Male	323	64.73	47.44	17.29
	Female	158	80.05	54.37	25.68
	Total	481			
Parent Assessment					
	Male	230	95.76	48.19	47.57
	Female	108	109.62	49.33	60.29
	Total	338			

Treatment Outcome by Primary Diagnoses

Three associated DSM-IV disorder types were examined to explore the effect primary diagnoses might have had on treatment outcome. They were: 1) behavioral disorders, 2) substance disorders, and 3) mood disorders (the "other" category was also examined). Table 15 shows that for clients diagnosed with mood disorders, the client self-report indicated the highest Y-OQ scores at admission, and the lowest scores at discharge, indicating significant change and a return to below the cut score of 46. Clients diagnosed with substance problems self-reported the lowest admission score and highest discharge score. The low score at admission could be an indication of past and immediate drug and alcohol use and a failure to recognize the consequences of the behavior. This is consistent with parent assessment scores for clients with substance problems, which are highest for the three disorder types at admission. Interestingly, the "other" category in client self-report was significantly lower ($p.<.000$) at both admission and discharge than the other three disorder types. This category included Adjustment, Anxiety, and Post Traumatic Stress Disorders.

Table 15. Study participant average Y-OQ score at admission, discharge, and difference, according to primary diagnoses.

Diagnoses	Frequency	Average Admission	Average Discharge	Average Difference
Client Self Report				
Behavior Disorders[1]	106	70.07	46.31	23.75
Substance Disorders[2]	145	69.50	48.06	21.44
Mood Disorders[3]	76	78.79	45.99	32.80
Other[4]	31	56.97	41.32	15.65
Total	**358**			
Parent Assessment				
Behavior Disorders[1]	53	97.30	43.75	53.55
Substance Disorders[2]	99	104.13	55.97	48.16
Mood Disorders[3]	39	100.21	40.51	59.69
Other[4]	19	102.47	42.05	60.42
Total	**210**			

1. Includes Oppositional Defiant, Attention Deficit, and Conduct Disorders.
2. Includes disorders associated with substance abuse or dependence.
3. Includes Depression, Dysthymia or Bi-polar Disorders.
4. Includes Adjustment, Anxiety, and Posttraumatic Stress Disorder.

Clients diagnosed with mood disorders self-reported the highest Y-OQ scores at admission, and the lowest at discharge, indicating a return to below the cut score of 46.

Treatment Outcome by Presenting Symptom Severity

Cut-scores of 100, 79, 46, and 24 were used to determine the score thresholds for clients categorized as "severe," "dysfunctional" "normal," and "good" (Burlingame et al., 1996). These cut scores were developed to examine how clients with more severe presenting issues respond to treatment when compared to clients who have less severe issues and more closely reflect "normal" populations. The data show that 76% of client self-reports, and 97% of parent assessments, indicate dysfunctional and severe presenting symptoms for OBH clients. Table 16 shows that for "dysfunctional," and "severe" cases at admission, a statistically significant reduction in average scores was noted for client self-report (17.47 and 52.94 average change respectively). Parent assessments also showed that for dysfunctional and severe groups, average change was also greater and statistically significant (average difference of 30.37 and 59.77 respectively). Also, the change in score was greater than 13 points for both client self-report and parent assessments for dysfunctional and severe groups. Both client self-report and parent assessment show that for "good" groups, presenting symptoms may have deteriorated, as indicated by negative change scores. Though the percentage of clients in these categories is less than other groups, this is an interesting finding that future research could explore—the appropriateness of OBH for clients with little or no presenting symptomatology and the degree to which assessment procedures at each program accurately assess this.

Table 16. Admission symptomatology characteristics and Y-OQ scores at admission and discharge including average change in score.

Categories	Frequency	Average Admission	Average Discharge	Average Difference
Client Self Report				
Good (-16-24)	29	15.38	17.17	-1.79
Normal (25-46)	87	36.30	32.51	3.79
Dysfunctional (47-79)	182	62.87	45.41	17.47*
Severe (80-240)	183	121.54	68.60	52.94*
Total	**481**			
Parent Assessment				
Good (-16-24)	3	19.67	38.67	-19.00
Normal (25-46)	6	37.50	34.00	3.50
Dysfunctional (47-79)	72	67.93	37.56	30.37*
Severe (80-240)	257	101.83	52.06	59.77*
Total	**338**			

* Statistically significant differences between admission and discharge scores ($p<.000$)

Research Question 3. How did OBH treatment outcomes vary according to program length and treatment model?

Treatment Outcome by Program Model and Length

Table 17 shows outcomes presented by **four common OBH program models**, based on how and to what degree the outdoor setting is utilized. They are; 1) **contained expedition** programs (CE), where clients and the treatment team remain together on a wilderness expedition for three weeks; 2) **continuous flow expedition** (CFE) programs where leaders and therapists, and clients rotate in and out of on-going groups in the wilderness for about 8-weeks; 3) **base camp expedition** (BE) programs which have structured base camps in natural environments and take expedition outings from the base (7-weeks); and, 4) **residential expedition** (RE) programs include emotional growth schools, residential treatment centers, Job Corps Centers and other designations, such as recovery centers and/or youth ranches who use wilderness and outdoor treatment as a tool to augment other services, and are usually longer.

Table 17. OBH outcomes by program length and treatment model used, including number of assessments, average admission and discharge score, average difference, and statistical significance.

Model	Length	Assessment	Frequency	Average Admission Score	Average Discharge Score	Average Difference	Statistical Significance
Contained Expedition	3-weeks	Client	172	70.42	52.22	18.20	**
		Parent	134	100.47	61.04	39.52	**
Continuous Flow	8-weeks	Client	146	65.58	39.48	26.10	**
		Parent	150	99.33	36.47	62.86	**
Base Camp	7-weeks	Client	122	78.59	47.55	31.04	**
		Parent	26	99.88	54.81	45.08	**
Residential Expedition*	4-weeks	Client	41	66.32	56.71	9.61	**
		Parent	25	104.52	48.84	55.68	**

*Residential assessments were completed after the wilderness phase of the treatment, which was 4-weeks after the client had been admitted into treatment. After this phase the client has a 2-day meeting with parents, then returns to the residential facility.

**Statistically different means between admission and discharge ($p<.000$).

Table 17 shows all four OBH models indicated statistically significant differences between admission and discharge scores for both client self-report and parent assessments. Continuous flow expedition (CFE) programs show the greatest reduction in composite scores across all program models. The shorter contained expedition (CE) programs, show the least reduction in scores, and client self-reports show less reduction than did parents. The longer residential

expedition (RE) programs, which for this study, assessed change in clients after 28-days in the wilderness phase of treatment, show reductions in scores for both parents and client assessments, though parent assessed score reductions are considerably higher than client self-reports. It is important to note that the CFE programs that spend the longest time in the wilderness (8-weeks), show greater score reductions than other models, except BE programs, which show higher reductions in client self-report scores.

Comparing Results to Other Y-OQ Studies

Despite differences in clients and treatments, results from this study were compared to mean scores from parent assessment of children in outpatient and inpatient settings reported in the Y-OQ manual (Burlingame et al., 1996) and two recent studies reported in the literature of in-home, family centered psychiatric treatment (Mosier et al., 2001) and a partial-day treatment program for referred children (Robinson, 2000). Both studies report parent assessment only of the effects of treatment from these interventions. Table 16 shows the average admission score for this study assessed by parents (100.19) is similar to the inpatient assessments by Burlingame et al. (1996) and the parent assessments found by Mosier et al. (2001) and Robinson (2000). Our study of OBH treatment showed greater parent score reductions than identified by Mosier and Robinson, and also showed lower discharge scores by parents of almost 30 points. No other studies reported in the OBH-related literature have used the Y-OQ. Hopefully there will be more studies assessing outcomes of OBH programs and wilderness therapy in the future using Y-OQ methodology.

Our study of OBH treatment showed greater parent score reductions than identified by Mosier and Robinson, and also showed lower discharge scores by parents of almost 30 points.

Table 17. Studies to compare Y-OQ outcome assessments including type of treatment, number of study participants, age range, length, average admission score, and percent improved and recovered.

Study	Treatment	Assessment Device and Assessor	N	Age Range	Treatment Length (Ave.)	Ave. Admission Score	Ave. Discharge Score	Average Difference
Burlingame et al (1996)	Outpatient	Y-OQ (parent)	342	4-17	-	79	-	-
Burlingame et al (1996)	Inpatient	Y-OQ (parent)	174	4-17	-	100	-	-
Mosier et al (2001)	In-Home Family Treatment	Y-OQ (parent)	104	4-17	8-weeks	106.53	75.17	31.36
Robinson (2000)	Partial Day-Treatment Program	Y-OQ (parent)	215	5-13	15-weeks	94.12	77.16	16.96
Russell (2001)	OBH	Y-OQ (parent)	338	13-17	5-weeks	100.19	48.55	51.64
	OBH	SR Y-OQ (client)	481	13-18	5-weeks	70.67	47.55	20.07

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Directions for Further Research

Findings from this study indicate that participating in OBH treatment reduced behavioral and emotional symptoms of clients immediately following treatment, as measured by both client self-report and parent assessments using the Youth Outcome Questionnaire (Y-OQ). The next phase of this study will be to conduct 3-, 6-, and 12-month assessments after discharge to better understand long term effects of OBH treatment on adolescents. Related studies in the literature suggest there may be a regression of positive effects after treatment, and there is a need for follow-up programs and aftercare services to help the adolescent maintain the positive changes from treatment (Bandoroff, 1989; Pitstick, 1995; Russell, 2000; Winterdyk & Griffiths, 1984).

Because substance abuse is a focus of treatment, relapse prevention is also critical to consider. When addressing an adolescents' likelihood of relapse, many investigators suggest that successful recovery involves the maintenance of new skills and lifestyle patterns that promote positive, independent patterns of behavior; the integration of these behaviors into regular day-to-day activities is the essence of relapse prevention (Brownell, Marlatt, Lichtenstein, & Wilson, 1986). The question becomes: **To what degree will clients take the skills they have learned in OBH and apply them to their everyday lives?**

Few studies have addressed this question and evaluated the long-term effects of OBH-related programs on relapse and found positive results. Bennet et al. (1998) found that a therapeutic camping program was more effective at reducing the frequency of negative thoughts and reducing alcohol craving when compared with a residential drug and alcohol treatment model. They also noted a reduction in alcohol use 10 months after the program, with the experimental group reporting 69% abstinence, compared with the control group report of 42% abstinence. Russell (1999) studied 12 case studies four months after completion of a wilderness program and found that three cases (25%) self-reported they had relapsed on drugs and alcohol, while the other nine (75%) had not relapsed. These studies report positive results in treatment of substance abuse, but highlight the lack of research in this area and the need to examine how aftercare treatment is utilized by clients, and the need to assess clients at follow-up periods posttreatment.

Key questions to address in the next phase of the study will include: What is the best way to transition the client from OBH to an aftercare environment? How well will the child do if he or she returns home to the same family or peer environment? Will positive outcomes identified in this study be maintained or begin to fade? Will parent and client assessments become more similar after treatment?

Summary and Conclusions

Conclusions from this study are:

1. The clients enrolling in the eight OBH programs during the period of this study were predominantly male (69%) and between the ages of 16-18 (75%).

2. Clients entered treatment with a variety of disruptive behavioral, mood and substance disorders as their primary diagnoses. The most frequent disorders for those with diagnoses (56% of the total study population) were behavioral disorders (38%), including Oppositional Defiant, Attention Deficit, and Conduct Disorder. Substance disorders (includes a wide range of substances, including alcohol, cannabis, and tobacco) comprised 31% of diagnoses, while mood disorders comprised 23%, which includes Depression or Dysthymic diagnoses.

3. Over half (57%) of the OBH clients had tried outpatient services, while 17% had utilized inpatient services prior to OBH treatment. Some (13%) had tried both types of services prior to OBH treatment.

4. On average, clients showed a statistically significant reduction in presenting symptoms from admission to discharge from treatment, which averaged 38-days. **Client self-report** mean Y-OQ scores at admission were 70.67; mean discharge scores were 47.55, indicating an average score reduction of more than 20 points. **Parent assessed** Y-OQ mean scores at admission were 101.19; mean discharge scores were 48.55, indicating an average reduction of 52.64 points. Thus, parents perceived the clients presenting symptoms as more severe than did the clients themselves, but they perceived symptoms at discharge that were very similar, and on average close to the normal range of symptoms (indicated by a score of 46) as established by Burlingame et al (1996).

5. Clients diagnosed with mood disorders, show the highest client self-report Y-OQ scores at admission (78.59), and the lowest scores at discharge (45.99), indicating significant change and a return to below the cut score of 46. Clients diagnosed with substance problems self-reported the lowest admission score and highest discharge score (69.50 and 48.06 respectively). The low score at admission could be an indication of past and immediate drug and alcohol use. Parent assessment of those clients diagnosed with substance problems was highest at admission and discharge (104.13 and 55.97 respectively) indicating concern by parents of substance use, and an area with which OBH treatment should focus.

6. Client self-reported Y-OQ scores across all ages show similar reductions from admission to discharge, and with exception of 15-year olds, showed a trend of increasing score at admission and greater reductions with increasing age (16 to 19). Client self-report and parent assessment of 13-year olds was the highest noted reduction of all aage groups. Given this finding, the utilization of OBH as an early intervention could be an important treatment consideration.

7. Female clients report higher Y-OQ admission and discharge scores for both client self-report and parent assessments, and also showed a greater reduction in scores than males, though males outnumber female clients in this study nearly three to one.

8. The CFE model, with an average of 8-weeks in treatment, all in wilderness, showed the greatest reductions in scores, as indicated by parent assessment (score reduction of 67.86 from admission to discharge). The BE model showed the greatest reduction in client self-report scores (score reduction of 31.04). Each of these longer term OBH models indicated clients had moved to within, or very close to, a normal range of functioning as indicated by the cut score of 46. These findings are interesting, and prompt the consideration as to which type of aftercare services are most suitable for these clients. To maintain therapeutic progress and prevent relapse, would they be better served with outpatient follow-up, rather than follow-up residential treatment given noted treatment outcomes?

The shorter CE (21-days) and RE (28-days) programs also indicated clients with important score reductions in short periods of time, yet discharge scores remained above the cut score as indicated by both client self-reports and parent assessments. The implications of this finding prompts consideration of the role these shorter programs could play in helping resistant adolescents be more receptive to other forms of treatment following OBH treatment.

9. This study of OBH treatment showed greater parent score reductions than identified by other studies noted in the literature (Mosier 2001; Robinson, 2000) and also showed lower discharge scores by parents of almost 30 points. There are currently no other studies reported in the OBH-related literature that have used the Y-OQ.

In conclusion, this study indicates that participation in OBH led to important reductions in the severity of behavioral and emotional symptoms, as perceived by the clients themselves, and even more so by their parents as measured by the Y-OQ. Almost half of the study participants returned to a normal range of symptoms as a result of OBH treatment as assessed by clients (44%) and parents (46%).

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